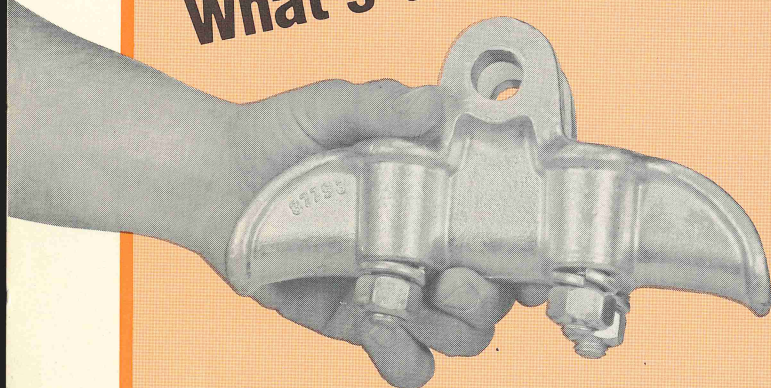




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What's the catalog number?



This man is holding an "unidentified" suspension clamp. By reference to O-B's tabulation, he notes the clamp body number, 87793. The piece is made of aluminum. The keeperpiece bears a number 89126. From these three pieces of data, using the publication "O-B Conductor Clamp Identification," he can determine the catalog number is 87104. The clamp is listed on page 4 of O-B Hardware Catalog 61.

O-B's tabulation of markings gives you a quick answer

There are many times when power company personnel would find it convenient to determine the catalog number of an O-B strain or suspension clamp merely by examining the piece.

We have good reasons for not putting the catalog number on the clamp. Often, two catalog numbers may use the same body with minor modifications and with only a change in keeperpieces. The same clamp, with no fitting, with socket fitting, or with clevis fitting, takes three different catalog numbers. If we tried to put the catalog number on every clamp, confusion would be endless, duplicated inventory would be tremendous, and pattern expense ruinous. We try to avoid "built in" shipping errors and needless cost.

One thing to remember, however, is that no two clamps use the same combination of body number, keeperpiece number, and metal. These three details, if known, will identify any O-B clamp. A small publication, available without cost, tabulates this information. We will be glad to supply any quantity you wish. Just use the attached coupon, or write us a letter.

While the tabulation is tied directly to O-B's current hardware catalog, Number 61, several items had been discontinued by the time of its publication. The tabulation also shows the pages in the previous catalog (Number 55) where these discontinued items were listed.

And, if you must go back in history before these two catalogs, tell us the kind of metal, body number and keeperpiece number, and we will identify a clamp for you.

The Ohio Brass Company
380 North Main Street
Mansfield, Ohio 44902

Please send me _____ copies of O-B CONDUCTOR CLAMP IDENTIFICATION. Publication Number 2188-HR 3.

Name _____

Position _____

Company _____

Address _____

City _____ State _____ Zip _____

7708-H

PUBLISHED BY THE OHIO BRASS COMPANY

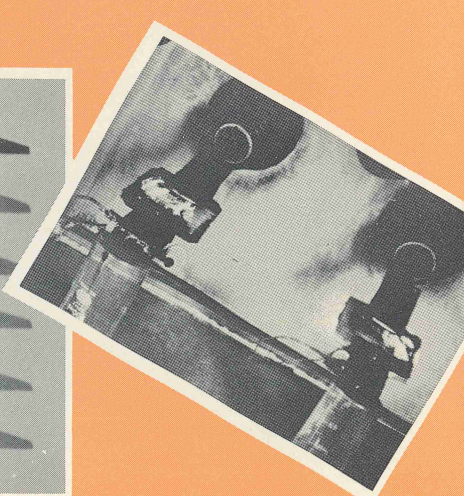
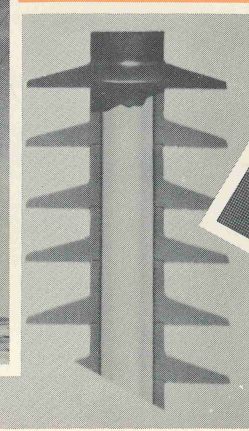
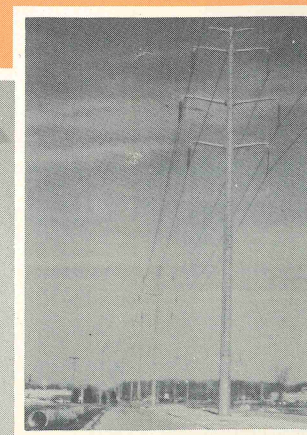
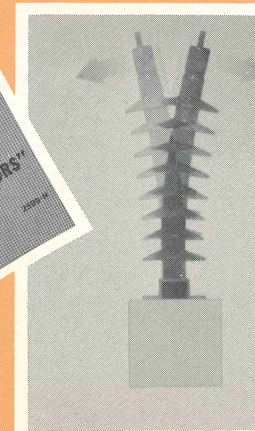
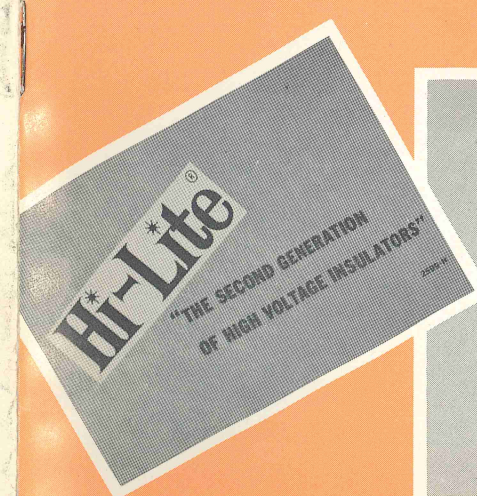


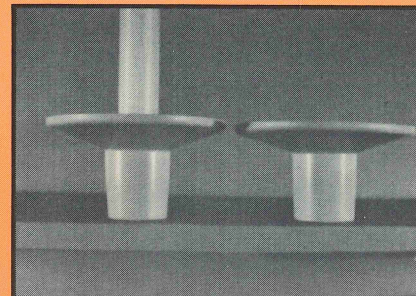
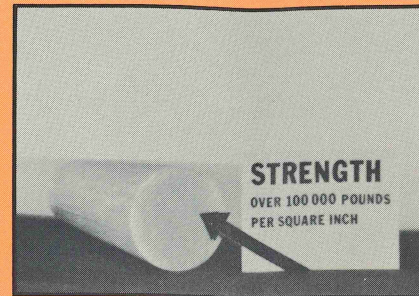
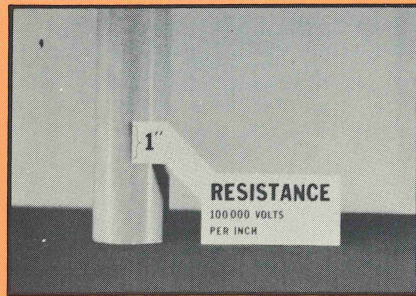
Hi-Tension News

MANSFIELD, OHIO 44902 — VOL. 46, NO. 8 AUG., 1977

O-B ANNOUNCES

NEW SCREEN PRODUCTION ON Hi-Lite® INSULATORS





Hi*Lite® featured in new screen production

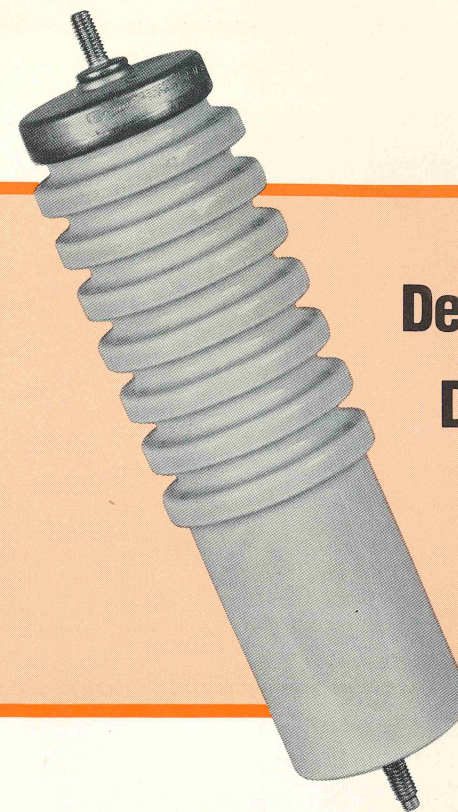
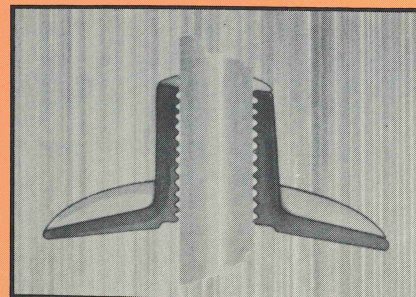
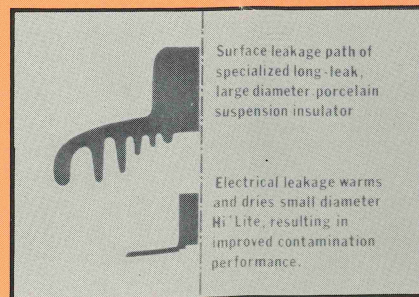
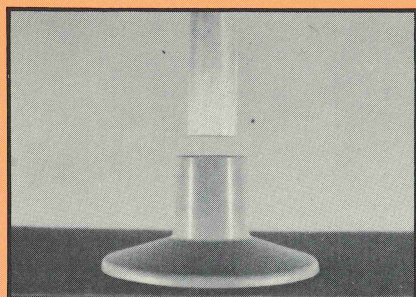
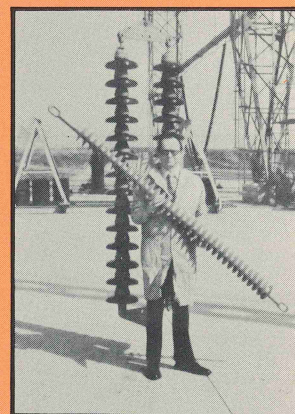
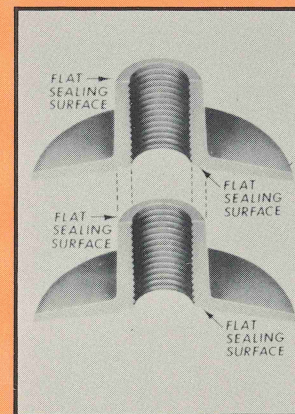
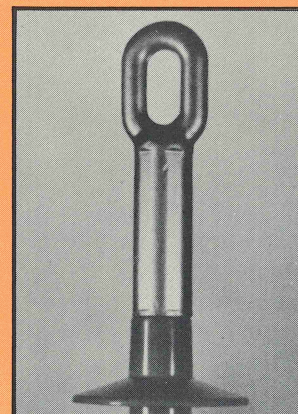
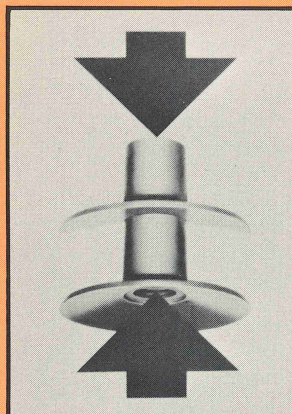
The whole story of Hi*Lite insulators has now been put together. A new sound-slide production is in the hands of all O-B district managers who will be happy to make arrangements for showing. Screen time is 21 minutes. It can be presented "live" or by synchronized slide change equipment.

After a detailed description of Hi*Lite construction, the audience is taken into the Frank B. Black Research Center to explore the extensive testing and development that has taken over ten years of

continuous laboratory work. Included is an illustrated report on resistance to vandalism damage by gunshot.

Please note particularly that it is not necessary to have a theater audience to justify a showing. We will be glad to put it on for only two or three people in your organization.

If you care to view this new Hi*Lite presentation, your O-B district manager will make the arrangements.



Design tests for new DA-IV arresters anticipate changes in industry standards

Ohio Brass' introduction of a second, higher level durability distribution class arrester anticipates general revision of applicable industry standards. O-B's DA-III arrester meets or exceeds all specifications of the current ANSI Surge Arrester Standard

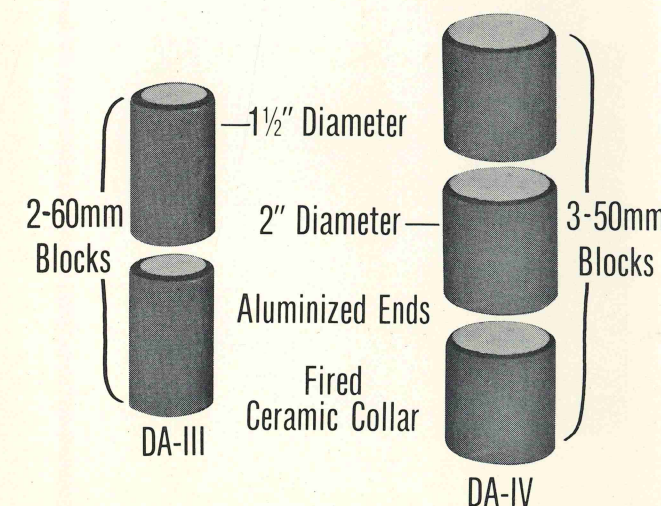
C62.1-1975. This level of distribution arrester protective capabilities was established by "a consensus of those substantially concerned with its scope and provisions" and is still adequate for a broad range of normal applications.

Distribution arresters are now installed in more locations where duty requirements are expected to be beyond those satisfied by arresters meeting the present standard. The use of distribution class arresters as line protectors serves as an example of a type of installation requiring much greater durability than a normal application where the arrester is located adjacent to the distribution transformer bushing. Other combinations of high lightning incidence, and higher reliability circuits are also factors in establishing the need for high performance distribution arresters.

Selection of design objectives for a higher durability distribution arrester has been based on a careful study of customers' recommendations, proved manufacturing techniques, and economic considerations. Development work has progressed on the assumption that new industry standards will designate two levels of durability for distribution class arresters.

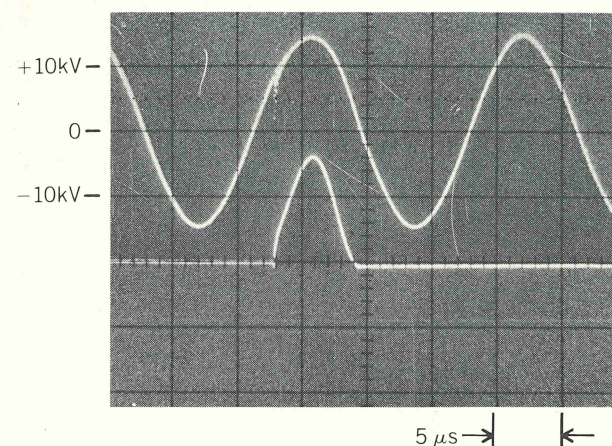
Durability of an arrester pertains to its ability to discharge both high current surges and long duration-low current surges, which include successive discharges of multiple-component lightning strokes. Sparkover and IR discharge voltages, the customary measures of an arrester's protective

VALVE BLOCK COMPARISON 9 KV ARRESTER

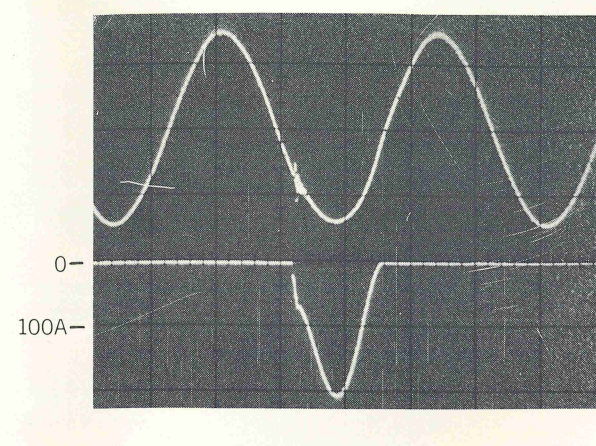


Durability characteristics of the DA-IV distribution arrester are about double that of the DA-III design as the result of substantially increasing the volume of the valve block resistors.

DUTY CYCLE — 1ST OPERATION



DUTY CYCLE — 7TH OPERATION



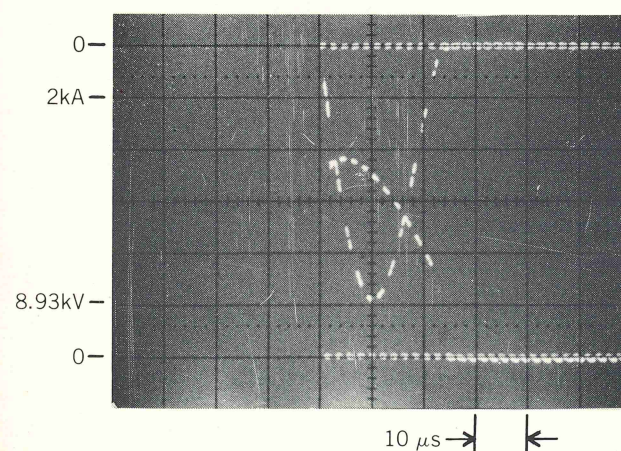
The 'round-the-clock' duty-cycle test specified in ANSI C62.1 - 1975 was conducted on the DA-IV arrester using a crest impulse current of 10 kA. A full set of 24 oscillograms show arrester operation at 15-degree intervals on the 60-Hertz sine wave; the first and seventh operations illustrated are typical of the test results.

capability, are not necessarily involved in developing a high durability unit. Protective characteristics will be found to be almost identical for standard and high performance designs.

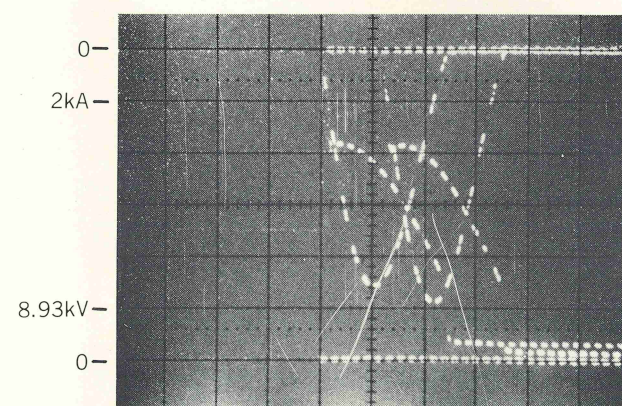
Among the modified ANSI standard test procedures which O-B's new DA-IV arrester passed was a

duty-cycle test with initiation surge currents doubled from present 5 kA to 10 kA. Discharge voltage at 10 kA, 60-Hz sparkover, and RIV at rated voltage were recorded before and after the round-the-clock routine described in the standard and found to be acceptable.

DISCHARGE VOLTAGE BEFORE



DISCHARGE VOLTAGE AFTER



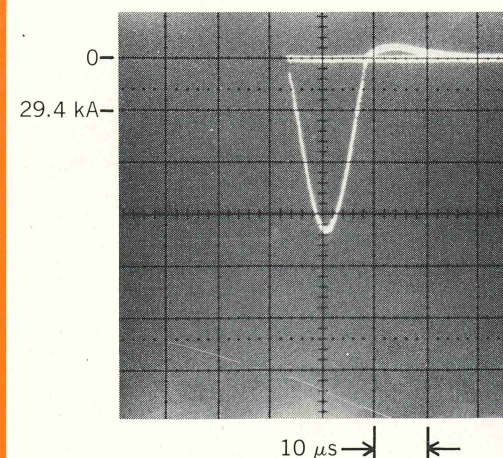
Discharge voltage of the DA-IV arrester was measured before and after the 10-kA duty-cycle test. The increase in discharge voltage is within the limits specified in the ANSI standard procedure.

In another design test, low-current-long duration discharge capability was established, again modifying the ANSI standard test procedure by increasing the rectangular current wave discharge from 20 discharges with a minimum value of 75 amperes and a minimum duration of 1000 microseconds to 30 discharges with a minimum value of 250 amperes and a 2000 microsecond duration. Twenty specimens were tested. All passed this increased current surge discharge.

A third test for durability was the high current-short duration test described in the ANSI standard, except that three applications of 100 kA were given the specimens instead of the two discharges at 65 kA specified in the present standard. Twenty DA-IV arrester samples were tested and all survived. As in the other tests, the current surges through the arresters were recorded on oscillograph photographs.

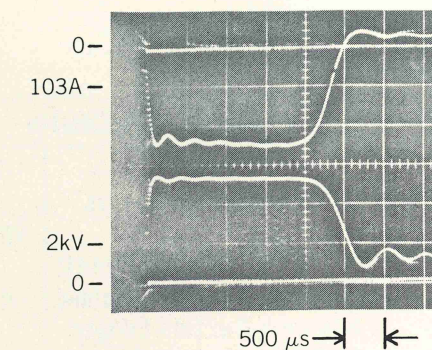
In comparison with the design tests given station and intermediate class arresters, the 10 kA duty-cycle test given the DA-IV corresponds to that specified for station class arresters and is much more severe than the 5-kA test presently specified for intermediate or distribution class arresters.

The values chosen for these tests for O-B's DA-IV distribution arresters represent an improvement in durability characteristics about double those of the standard duty DA-III arresters. The tests were not intended to determine the maximum durability of the DA-IV arrester, although it is quite likely that this design will pass special-interest tests which have been proposed while the revision of standards is developed by industry committees.

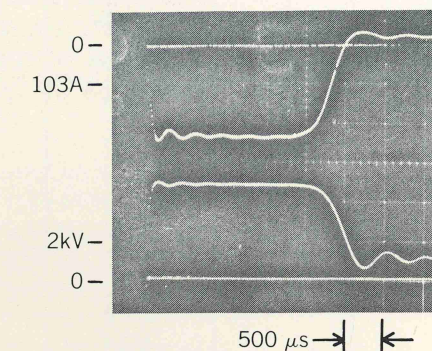


Test oscillogram illustrating the application of a 100-kA current discharge through the DA-IV arrester. Twenty specimens were each subjected to three 100-kA discharges without failure.

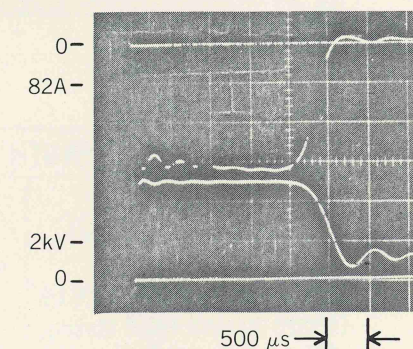
Specimen #1 — Discharge #3



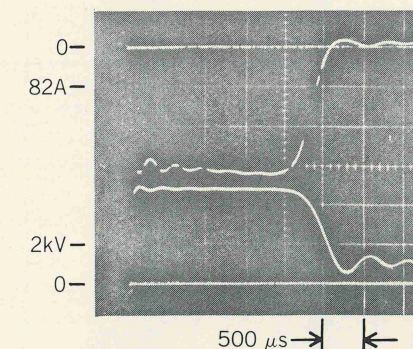
Specimen #1 — Discharge #30



Specimen #8 — Discharge #6



Specimen #8 — Discharge #29



Typical test oscillograms illustrate application of a 250-ampere, 2000-microsecond current discharge on DA-IV arresters. Twenty specimens were subjected to this low current-long duration test, each specimen receiving 30 discharges spaced at one-minute intervals.

TABLE 1

10 000-POUND WORKING STRENGTH				
Hi*Lite Suspension Insulators		Porcelain Suspension Insulators		Ratio of Weight –
		One String Number 32440 20 000-Pound M&E Rating 5¾-Inch Section Length 11.9 Pounds Unit Weight		Hi*Lite To Porcelain
Section Length	Total Weight	Number Of Units	Total Weight	
Inches	Pounds		Pounds	Per Cent
38¼	7	7	83	8
44	8½	8	95	8
52	9½	9	107	8
55	10	10	119	8
64	11½	11	131	8
74	13½	13	155	8
84	15	15	179	8
94	17	16	190	8
104	19	18	214	8
124	22½	22	262	8

Hi*Lite® insulators are compared to porcelain in their strength - to - weight ratio

In published material reference has been made to the light weight of Hi*Lite suspension insulators. Five to ten per cent the weight of porcelain equivalents has been a common expression. We have been asked to spell this out.

Tabular data presented here includes some latitude. Hi*Lite insulator strings are one-piece assemblies, having a fixed section length. Porcelain insulator strings consist of a series of 5¾-inch units. Therefore, the unit of measurement for total section length of a porcelain string is a multiple of 5¾ inches. This seldom divides evenly into the section length of a Hi*Lite string. Therefore, in making a comparison, one must round-off the number of units in a porcelain insulator string. This is the case when section length is used as a basis of comparison.

In Tables 3 and 4, multiple strings of porcelain insulators are required to match working strengths with Hi*Lite. The weight of yoking hardware must be added to the weight of the insulators for a realistic comparison. Since there is some choice in yoking methods, a specific weight figure is not practical. In lieu of this, an arbitrary weight of 100 pounds has been added to double strings, and 300 pounds to quadruple strings.

What do these figures tell us? First, construction savings. When you deal with less than one-tenth the weight of porcelain (often much less than one-tenth) many details of building a line are simplified. Hoisting methods and equipment, transportation and ground handling, and tower work are facilitated. Men experienced in the field will add many more details to the advantages of light weight.

A second, probably more important, consideration is load on the tower. Weight of insulation, once sometimes figured in tons of porcelain, is now in the order of hundreds of pounds. The whole structure of a tower can be affected, much to the advantage of the utility.

Looking toward the future, it can be seen that an insulation system combining extremely high strength with negligible weight can alter the entire concept of tower construction. Such considerations even go beyond engineering. The characteristics of Hi*Lite open up the opportunity for many possible tower designs with pleasing appearance.

TABLE 2

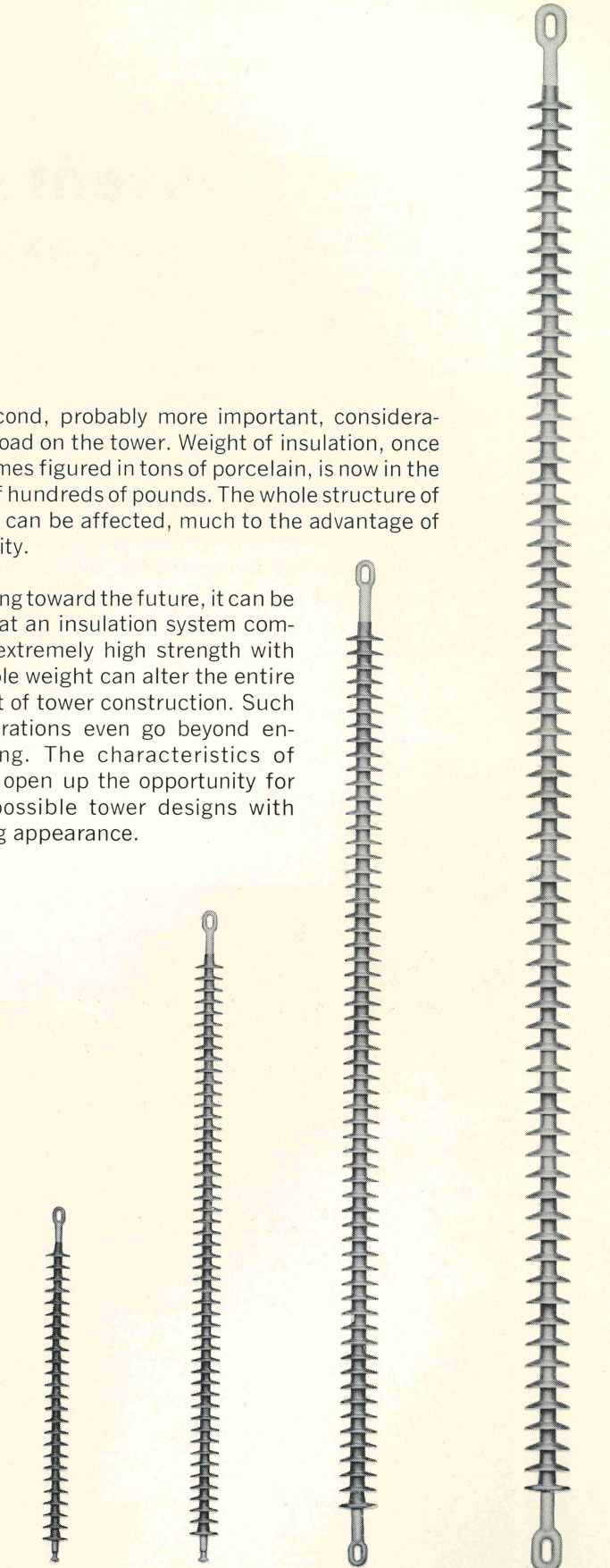
20 000-POUND WORKING STRENGTH				
Hi*Lite Suspension Insulators		Porcelain Suspension Insulators		Ratio of Weight –
		One String Number 47614 40 000-Pound M&E Rating 5¾-Inch Section Length 17 Pounds Unit Weight		Hi*Lite To Porcelain
Section Length	Total Weight	Number Of Units	Total Weight	
Inches	Pounds		Pounds	Per Cent
44¾	11½	8	136	8
52¾	13½	9	153	8
64¾	16½	11	187	8
74¾	18	13	221	8
84¾	21¼	15	255	8
94¾	24	16	272	8
104¾	26¼	18	306	8
124¾	31¼	22	374	8
144¾	36¼	25	425	8
164¾	41	29	493	8
226¾	56¼	39	663	8

TABLE 3

40 000-POUND WORKING STRENGTH				
Hi*Lite Suspension Insulators		Porcelain Suspension Insulators		Ratio of Weight –
		Two Strings Number 47614 40 000-Pound M&E Rating 5¾-Inch Section Length 17 Pounds Unit Weight Hardware Estimated 100 Pounds		Hi*Lite To Porcelain
Section Length	Total Weight	Number Of Units Per String	Total Weight	
Inches	Pounds		Pounds	Per Cent
87	34½	15	610	5
107	42	19	746	5
127	46½	22	848	5
147	56	26	984	5
167	63	29	1086	5
229	85	40	1460	5
247	91½	43	1562	5

TABLE 4

80 000-POUND WORKING STRENGTH				
Hi*Lite Suspension Insulators		Porcelain Suspension Insulators		Ratio of Weight –
		Four Strings Number 47614 40 000-Pound M&E Rating 5¾-Inch Section Length 17 Pounds Unit Weight Hardware Estimated 300 Pounds		Hi*Lite To Porcelain
Section Length	Total Weight	Number Of Units Per String	Total Weight	
Inches	Pounds		Pounds	Per Cent
90	61½	16	1388	4
110	72	19	1592	4
130	84	23	1864	4
150	96	26	2268	4
170	107	30	2540	4
232	145	40	3220	4
250	151	43	3424	4



10 000 LB. 20 000 LB. 40 000 LB. 80 000 LB.
Hi*Lite WORKING STRENGTHS

Present O-B clamptop design greatly simplifies handling

Continuing experience with use and application of the clamptop feature to insulators has resulted in further refinements and simplification of the device. When utility's order specifies the clamptop feature, insulators will be supplied with the latest equipment. Casual inspection will reveal little difference. What difference does exist is in the direction of detailed improvement, which certainly causes no objections and creates no problem in the hands of the user. We are not talking about any major or sweeping changes.

Men who use and specify clamptops, however, have asked us to bring them up to date on the current design.

Probably the most important change does not show. Several insulator manufacturers supply

clamptops but, in some cases, parts are not interchangeable. The base casting with its two pintle bolts has recently been incorporated into ANSI standards and will appear under C29.7-1977. All clamping devices will fit these standard base castings, even though there may be detailed variations in individual clamp design. As a result, modern ANSI standard clamptop insulators will accommodate the clamp of any other insulator made in accordance with the standard. We consider this to be a definite improvement since some clamptop users have objected to lack of interchangeability.

A detail of the new ANSI standard should be understood. The standard applies to the base casting of a vertical insulator—pintype or post. The base casting of a horizontal clamptop post is not pres-

New Catalog Number		Former Catalog Number		Conductor Diameter	
Malleable Iron	Aluminum	Malleable Iron	Aluminum	Min. Inches	Max. Inches
270650		91807		0.25	0.5625
270651		91808		0.50	1.0625
270652		91809		1.0625	1.50
	270660		93862	0.25	0.5625
	270661		91221	0.50	1.0625
	270662		91222	1.0625	1.50
	270663		91223	1.50	2.00

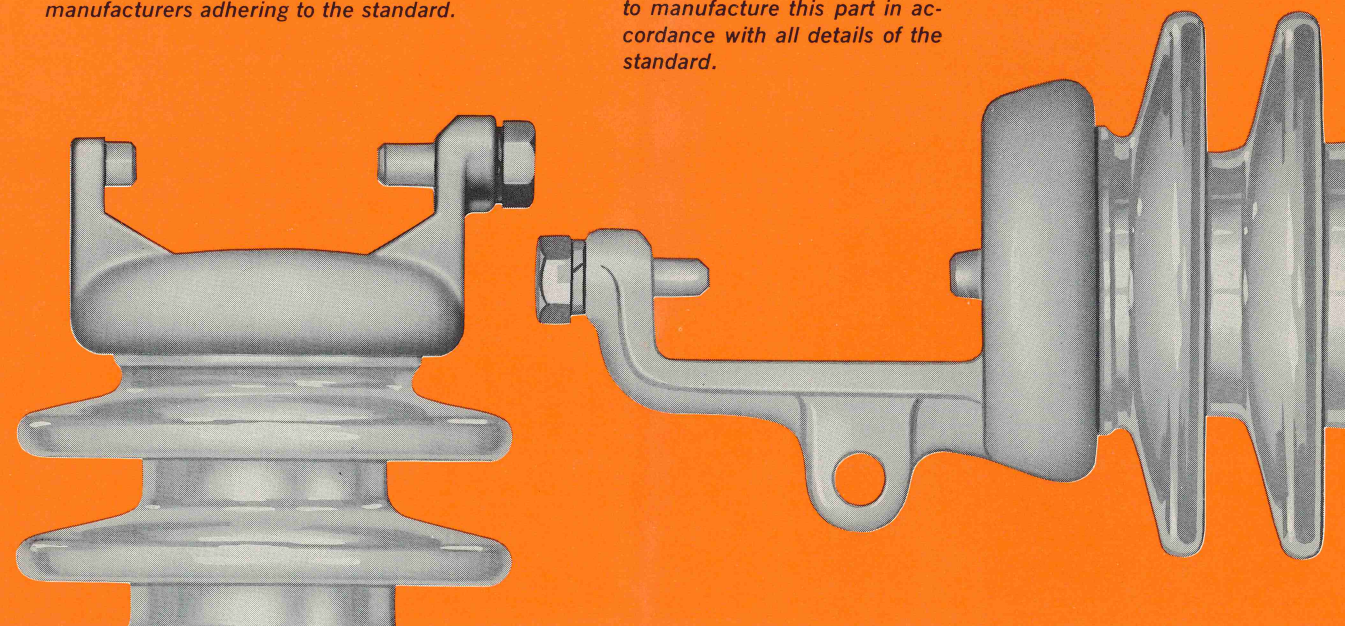
ently included in the standard. In O-B's case all details of the standard have been incorporated into the dimensions of both the vertical and horizontal base casting, as well as for the base casting applicable to Hi*Lite horizontal line posts.

We will now review steps in redesign of the O-B clamptop. There has been no change made in the

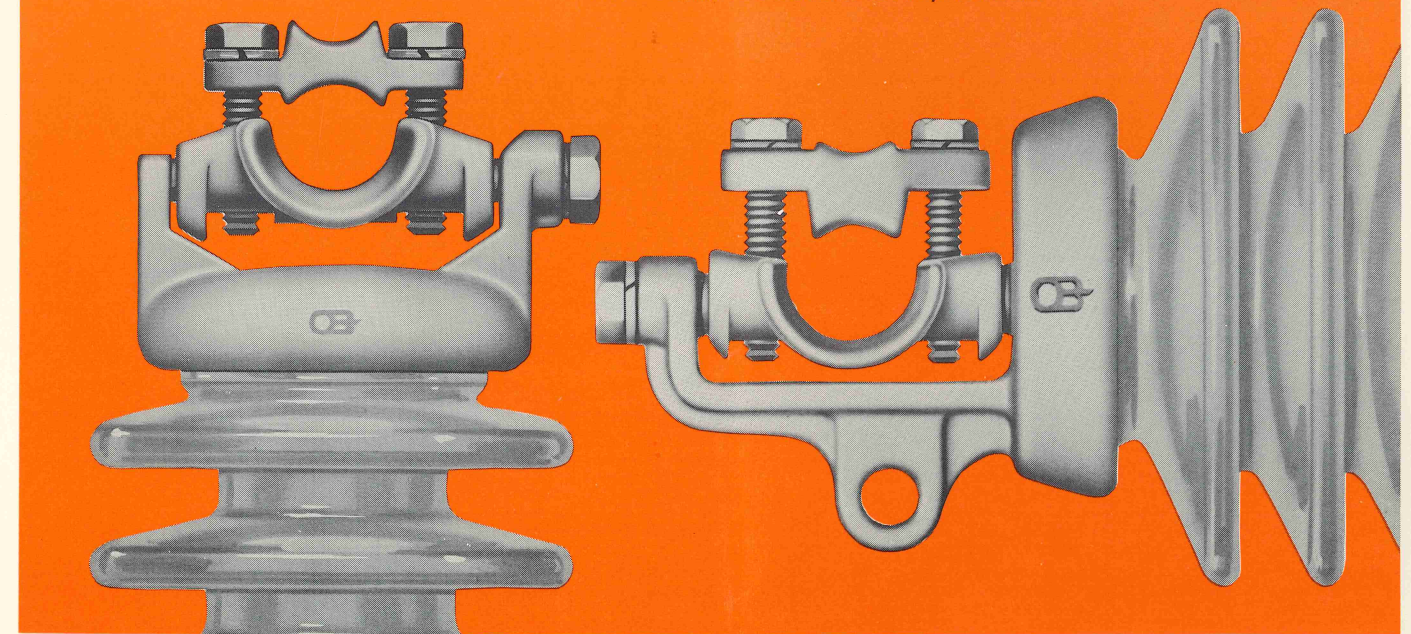
shape of the clamp body or keeperpiece — this is the reason for the great similarity in appearance between former and present models. Clamping bolts, however, have gone through a period of evolution. Original design used a pair of studs permanently mounted in the body. The keeperpiece was held in place by two nuts. A requirement of these nuts

Base casting and pintle bolt of vertical clamp-top insulators has recently been included in ANSI Standard C29.7-1977. This action insures interchangeable fit of clamps among all manufacturers adhering to the standard.

Base casting for horizontal clamptop insulators has not yet been included in the ANSI standard. O-B has elected, however, to manufacture this part in accordance with all details of the standard.



Vertical and horizontal O-B clamptop assemblies. Note that the keeperpiece is retained with a pair of regular capscrews including a captive lockwasher. This latest revision is considered an improvement.



was a secure locking device to prevent loosening by vibration, yet capable of being broken free with a hot stick wrench if work on the insulator was ever required.

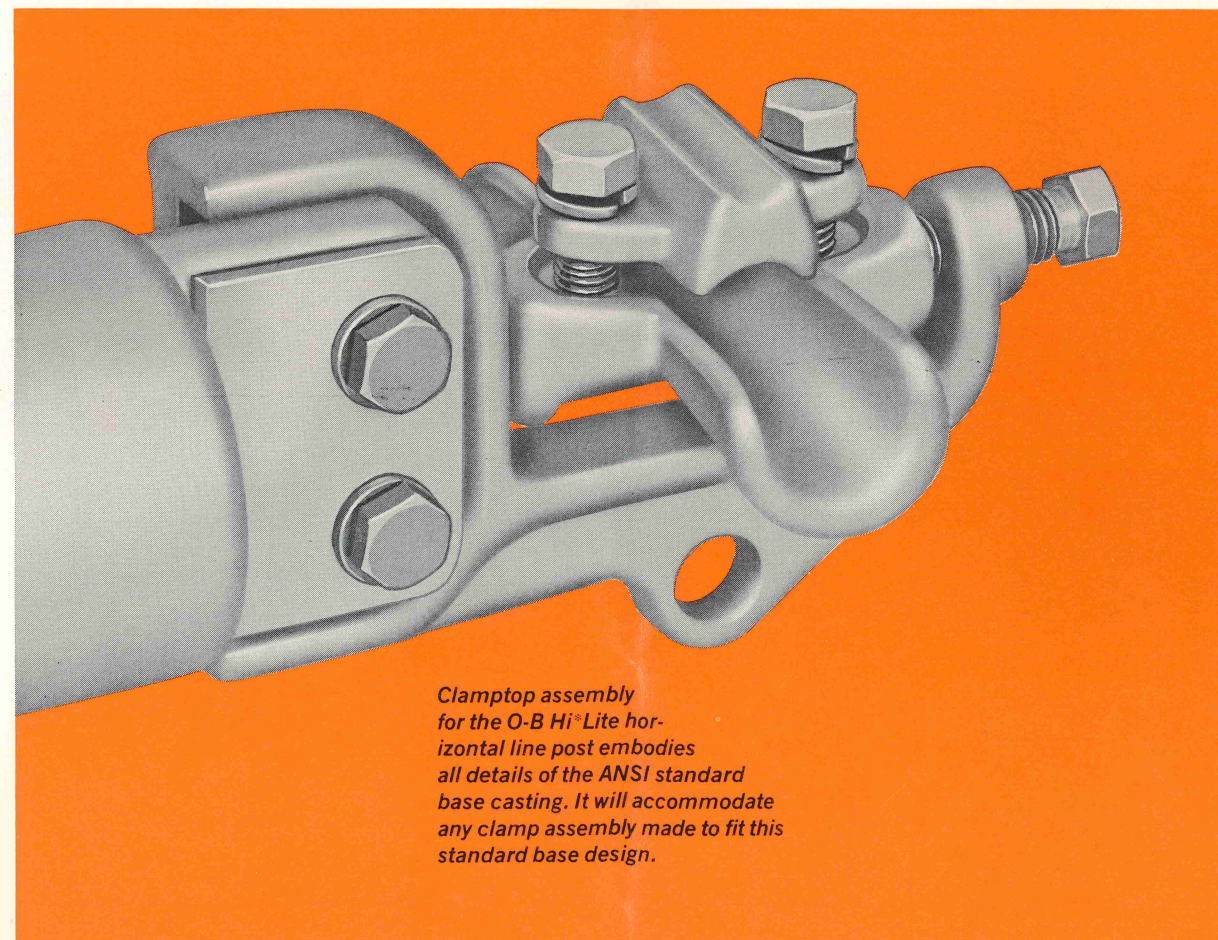
The first locking provision consisted of a small sharp wire point, integral with the nut, that bit into the thread and prevented accidental backing, yet could be forced when necessary. The operation of forcing stripped galvanizing from the threads and set up eventual corrosion. Some objections to this method led to its abandonment.

A later provision consisted of a special nut with a flared flat base on the bottom. When tightened the flared portion had a locking action that was quite satisfactory, and allowed for backing without damage to the thread. This, however, also had a disadvantage. The nut was a small part and, if dropped to the ground and lost, it was unlikely that a replacement could be found on the ordinary line truck.

It was finally decided to discard the fixed-stud-and-nut connection in favor of a much simpler method—a common capscrew. Present designs have a threaded body into which the screw is inserted and tightened. This is a routine operation with hot sticks. Locking is accomplished with a standard lockwasher. For convenience, this washer is captive—it cannot drop off the screw. We have found this device to be much more acceptable to users.

Changes in the clamptop have been limited to the evolution of a single detail. Users of the product may not have been aware of progressive changes and, if it was noticed, it was accepted as an improvement. But, during this period of evolution, the catalog got out of step, which is understandable.

If you wish to have a current listing for engineering or purchasing records, please note the accompanying table. New catalog numbers have been assigned to current production. Old numbers are included for reference.



Clamptop assembly for the O-B Hi-Lite horizontal line post embodies all details of the ANSI standard base casting. It will accommodate any clamp assembly made to fit this standard base design.

PRODUCT OF THE MONTH

Simplification of Non-Stacking Station Posts Produces Customer Benefits



Coincident with Ohio Brass' complete changeover to solid-core porcelain post insulators, the entire line of standard-strength non-stacking station posts was redesigned to incorporate the advances and improvements available in O-B production capabilities.

The attractive, new modern series of station posts has produced substantial benefits for both customers and the factory. Although the most pronounced advantages are in the solid, 100-percent-punctureproof porcelain bodies of the new station insulators, improvements have also been made in petticoat contours of the higher-rated units and in the end cap castings of all sizes.

Both the 46-kV and 69-kV standard-strength station posts are noticeably slimmer than their predecessors and have more petticoats. This new contour offers appreciable improvement in contamination performance.

The design simplification which is resulting in

much better production and shipping schedules throughout the entire line of standard-strength posts is the reduction of metal end cap castings from a previous total of twelve to the present three. The introduction of interchangeability in factory component inventories facilitates completion of assembled units and has practically eliminated delays in shipment.

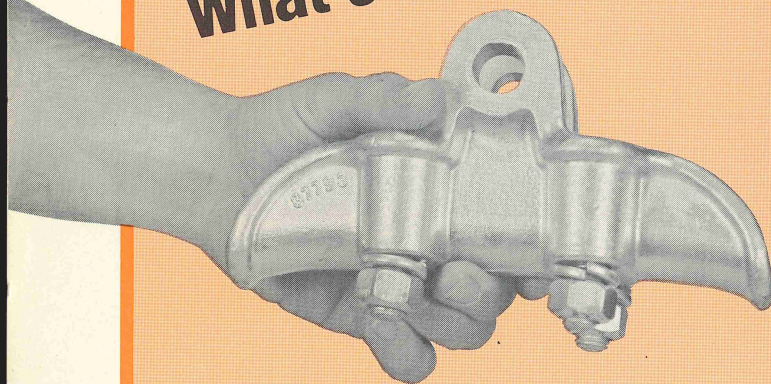
O-B's standard-strength non-stacking station posts are available for 7.5-, 15-, 23-, 34.5-, 46-, and 69-kV voltage class applications. All have three-inch bolt circle end caps with four 1/2"-13 tapped holes. Each rating meets all electrical and mechanical requirements of ANSI C29.9-1971 and is completely interchangeable with older O-B designs of the same voltage class. Catalog 67 gives full information concerning dimensions, specifications and ordering procedures. Ask your local district manager for a copy, or write The Ohio Brass Company, Mansfield, Ohio 44902.



Hi-Tension News

MANSFIELD, OHIO 44902 — VOL. 46, NO. 8 AUG., 1977

What's the catalog number?



This man is holding an "unidentified" suspension clamp. By reference to O-B's tabulation, he notes the clamp body number, 87793. The piece is made of aluminum. The keeperpiece bears a number 89126. From these three pieces of data, using the publication "O-B Conductor Clamp Identification," he can determine the catalog number is 87104. The clamp is listed on page 4 of O-B Hardware Catalog 61.

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And, if you must go back in history before these two catalogs, tell us the kind of metal, body number and keeperpiece number, and we will identify a clamp for you.

The Ohio Brass Company
 380 North Main Street
 Mansfield, Ohio 44902

Please send me _____ copies of O-B CONDUCTOR CLAMP IDENTIFICATION. Publication Number 2188-HR 3.

Name _____

Position _____

Company _____

Address _____

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